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(54) [Title] Method and Apparatus for Collecting Chlorofluorocarbons in Foamed Heat-Insulating Material

[Page (2) col. 1 line 1 – col. 2 line 18]

[Claims]

[Claim 1] A method for collecting chlorofluorocarbons in a foamed heat-insulating material, comprising peeling off an outer plate or an inner plate of a heat-insulating housing filled with a foamed heat-insulating material, sending this heat-insulating housing from which this outer plate or inner plate has been peeled off into an airtight disassembling chamber, peeling off with a peeling device the foamed heat-insulating material from the inner plate or outer plate while smashing it, separating with a separating device a peeling body used in the peeling device and the foamed heat-insulating material that has been peeled off, crushing with a crushing device the foamed heat-insulating material that has been separated so as to release chlorofluorocarbons sealed in inside air holes, and liquefying and collecting with a collecting device this chlorofluorocarbons that has been released.

[Claim 2] An apparatus for collecting chlorofluorocarbons in a foamed heat-insulating material, comprising a peeling device for peeling off an outer plate or an inner plate of a heat-insulating housing filled with a foamed heat-insulating material, sending the heat-insulating housing from which this outer plate or inner plate is peeled off into an airtight disassembling chamber and peeling off the foamed heat-insulating material from the inner plate or outer plate while smashing it, a separating device for separating a peeling body used in this peeling device and the foamed heat-insulating material that has been peeled off, a crushing device for crushing the foamed heat-insulating material that has been separated with this separating device so as to release chlorofluorocarbons sealed in inside air holes, and a collecting device for liquefying and collecting this chlorofluorocarbons that has been released.

[Claim 3] The apparatus for collecting chlorofluorocarbons in a foamed heat-insulating material according to claim 1 or 2, wherein the peeling device comprises an ejecting device for ejecting the peeling body at a high speed so as to peel off the foamed heat-insulating material from the inner plate or outer plate while smashing it.

[Claim 4] The apparatus for collecting chlorofluorocarbons in a foamed heat-insulating material according to claim 1 or 2, wherein the separating device comprises a separating means of separating the peeling body and the foamed heat-insulating material, a saucer for receiving the peeling body that has been separated with this separating means and a carrier means of carrying the foamed heat-insulating material that has been separated to the crushing device.

[Claim 5] The apparatus for collecting chlorofluorocarbons in a foamed heat-insulating material according to claim 3 or 4, wherein the peeling body is liquid such as water ejected at a high speed by the ejecting device, and the separating means and the carrier means are a mesh-type belt conveyer that passes the liquid and drops it onto the saucer while carrying the foamed heat-insulating material that has been separated from this liquid to the crushing device.

[Claim 6] The apparatus for collecting chlorofluorocarbons in a foamed heat-insulating material according to claim 4 or 5, wherein the peeling body is a substantially spherical steel material ejected at a high speed by the ejecting device, the carrier means is a belt conveyer that carries the foamed heat-insulating material in which this steel material is mixed, the separating means is a magnet provided on a circumferential portion of a wheel for moving the belt conveyer and a saucer provided below the belt conveyer, and when the foamed heat-insulating material in which this steel material is mixed is carried by the belt conveyer, the foamed heat-insulating material is dropped from an end of this belt conveyer onto the crushing device, whereas the steel material is attracted by the magnet via the belt conveyer so as to be separated from the foamed heat-insulating material and dropped onto the saucer while the belt conveyer is moved by the wheel.

[Claim 7] The apparatus for collecting chlorofluorocarbons in a foamed heat-insulating material according to claim 4 or 5, wherein the peeling body is a substantially spherical glass material or silicon carbide material ejected at a high speed by the ejecting device, the separating means is a saucer for being filled with water and receiving the foamed heat-insulating material in which the glass material or silicon carbide material is mixed, and the carrier means is a blowing machine for moving the foamed heat-insulating material floating on a water surface of the saucer and dropping it from the water surface onto the crushing device.

[Claim 8] The apparatus for collecting chlorofluorocarbons in a foamed heat-insulating material according to claim 1, 2, 4, 5, 6 or 7, wherein the crushing device comprises a pair of rollers that break by pressure the foamed heat-insulating material that has been carried by the carrier means.

[Claim 9] The apparatus for collecting chlorofluorocarbons in a foamed heat-insulating material according to claim 1, 2 or 8, wherein the collecting device comprises an intake port provided near the rollers and a chlorofluorocarbon collecting device arranged inside or outside the

disassembling chamber with this intake port being connected by an intake pipe.

[Page (3) col. 3 lines 3 – 9]

[0004]

[Problem to be solved by the invention] In view of the problem described above, the object of the present invention is to provide a method and an apparatus for collecting chlorofluorocarbons in a foamed heat-insulating material that make it possible to select easily a component member by peeling off a formed heat-insulating material used in refrigerators and the like and to liquefy and collect efficiently chlorofluorocarbons sealed in air holes inside this formed heat-insulating material.

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